

Oral History Program: Biographical Notes

(William) Ross BLUNDEN (1916 - 2003)

Traffic Engineer

- Birth & Family:** Born 18 June 1916 in Five Dock, Sydney. One brother.
- Education:** Attended Haberfield Primary School, then Fort Street Boys' High School where he became Dux of the School in 1932 winning the Killeen Memorial Prize.
- Qualifications:** B.Sc. (Hons) 1936, B.E. (Hons) 1938, Sydney University; James Vicars Prize for Road Engineering; Geoffrey Sulman Memorial Prize for Thesis. Royal Military College of Science 1944, Graduate of Advanced Course (Ballistics, Radar and Control Systems).
- Memberships:** FIEAust.; Fellow Chartered Institute of Transport (London); Member Institute of Traffic Engineers (Washington); Member Statistical Society of Australia; Member Australian Society for Operations Research; Member Australian Institute of Physics.
- Awards:** Institution of Engineers' Inaugural Medal in Transport Engineering.
- Work History:** Blunden graduated from Sydney University in 1939 and joined the Department of Main Roads as Assistant Engineer. He left later that same year to join the AIF where the opportunity arose to become involved with radar and computers, in which he had a great interest. Following war service in the Middle East with an anti-aircraft regiment, he continued to work with radar and computers, and on return to Australia was appointed Inspector of Radar Development.

In 1944 Blunden was sent to England where he successfully completed the Advanced Course (Ballistics, Radar and Control Systems) at the Royal College of Military Science. This was an advantage when he returned to civilian life at the end of the War as it helped him to obtain a position as Senior Research Officer in charge of the Mathematical Instrument Section with the C.S.I.R.O. at Sydney University, where he gave the first course of lectures on automatic control systems.

This Section later moved to the School of Electrical Engineering, during which time Blunden developed the first large scale automatic computing machine in Australia – the C.S.I.R.O. Differential Analyser. At the same time he also became interested in a new trend in computing - digital computing with electronic devices. Although England and the United States had these machines, the Australian one was an advance on the others because it was electro-mechanical, not fully mechanical.

While working on basic electronic computing, Blunden and his team built something similar to the first chip in Australia (although not microscopic in size) - the whole of the face of a cathode ray tube was adapted to store information in binary form.

Although still with the C.S.I.R.O., Blunden worked and taught at the Electrical Engineering School at Sydney University, and supervised research students such as Brian Speedy (later Professor of Automatic

Control Systems at the University of NSW) and Fred Evans (later a Professor of Power Engineering at the University of NSW), as well as a staff member Murray Allan (later Professor of Computing at the University of NSW).

After five years with the C.S.I.R.O. mainly working on the development of computers in their very early stages, Blunden accepted a post in 1953 as First Scientific Advisor to the Australian Military Board, which he saw as an opportunity to apply Operations Research in Australia. Operations Research was a wartime discovery: a means of applying scientific principles, knowledge and analysis as an integral part of the executive decision-making chain to get feedback between "the front line and the brass hats". As well as establishing the Australian Army Operational Research Group and undertaking major overseas assignments and investigations, this position also gave Blunden the chance to visit Woomera and observe rocket and atomic energy tests.

With his background in computer development, operations research and control philosophy, Blunden felt ready to take up a new challenge in 1957: that of the new Chair of Traffic Engineering which had been created at the University of New South Wales, and he was to spend the next twenty-five years of his professional life working in the area of transport and traffic. During this time he was responsible for the training of transport and traffic engineers, and also conducted and supervised research over a wide range of land use, transport and traffic problems. Blunden believed that the application of the Theory of Traffic Flow and the Queuing Theory (the theory of queues and waiting lines) would unravel many of the mysteries of traffic flow.

The main focus of the work Blunden performed in this position was to introduce basic concepts of mathematics and physics. One area of study concerned the geometry and kinematics of road networks, which arose from classroom discussions, and led to studies being done on the route factors of various forms of traffic networks, i.e. square grid, ring radial or spider networks with direct connections between all main points.

Other projects in which Blunden was involved included: directing a traffic and parking study for North Sydney at the request of Ted Mack, Mayor of North Sydney; chief offshore consultant to the Singapore Urban Development & Renewal project for four years in the late 60's and early 70's; the Central Traffic Study in Manila which was mainly done by an ex-student, Mr P G Pak Poy; a project in the early 1960's for a Sydney-Newcastle private toll road proposed by a consortium headed by John Tate, an architect developer. The Government decided against it, later bowing to public demand resulting in the construction of a new Sydney-Newcastle road via an alternate route.

Blunden has been a member of the Transport Panel of the Institute of Engineers Sydney Division; a Visiting Professor at various international universities; Chief Transportation Consultant to the UN-sponsored Singapore Urban Renewal & Development Project; Research Consultant to the Australian Road Research Board, the Commonwealth Bureau of Roads and the National Capital Development Commission. He has also produced many scientific, technical and general papers on transport and traffic topics, and since retirement has been involved in various Department of Main Roads Inquiries, i.e. the two Kirby Inquiries (Kiama-Chullora Link and the Warringah Transport Corridor), and the Castlereagh Expressway Inquiry and the Balmain Inquiry.

Blunden died in December 2003.

Prepared by Jill Willis, April 2004 from oral history interview conducted on 30.6.1992.